Operating Instructions

T4 – 24-110

CE

English version of operating instructions for operators.
Read and follow the instructions and safety instructions!
Subject to technical change.

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Dear customer,

Congratulations on choosing a quality product from FROLING.

The FROLING T4 wood chip boiler features a state-of-the-art design that conforms to all currently applicable standards and testing guidelines.

Please read and observe the operating instructions and always keep them close to the boiler for reference. Observing the requirements and safety information in the instruction manual makes a significant contribution to safe, appropriate, environmentally friendly and economical operation of the system.

The constant further development of our products means that there may be minor differences from the pictures and content. If you discover any errors, please let us know.

Subject to technical change.

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Guarantee conditions

Our sale and delivery conditions generally apply. These conditions have been made available to customers, and customers have been made aware of them at the time of order completion.

You can also find the guarantee conditions on the enclosed guarantee certificate.

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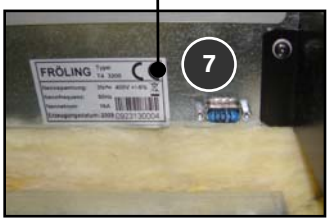
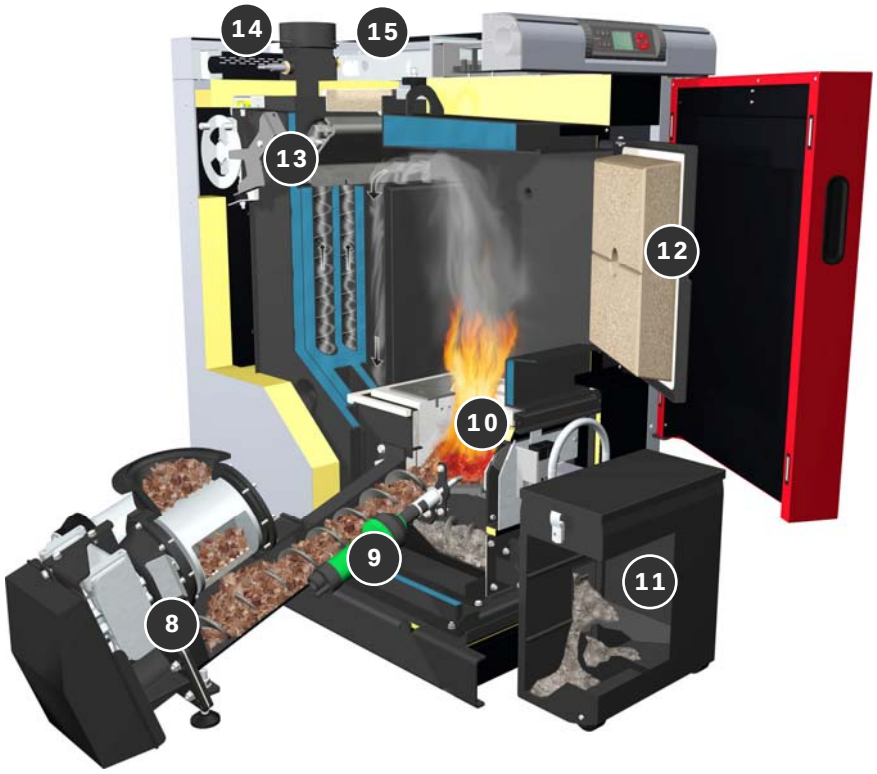
1 General

1.1 Product overview

At the back of the boiler:



Item	Description
1	Wood chip boiler - Froling T4
2	Main switch: switch the power supply on and off for the entire system
3	Safety Temperature Limiter STL
4	Control panel of the Lambdatronic H 3200 T4 controller
4.1	Status LED indicating operating status - GREEN constant: BOILER SWITCHED ON - GREEN flashing (Interval: 5 sec. OFF, 1 sec. ON): BOILER SWITCHED OFF - ORANGE constant: BUS error - ORANGE flashing: WARNING - RED flashing: FAULT
4.2	Large graphical display to show operating statuses and parameters
4.3	Navigation keys to move around in the menus and to change the parameter values
4.4	Function keys for calling up individual boiler functions or modes directly
5	Insulating cover
6	Heat exchanger cover
7	Service interface



Item	Description
8	Fuel transport unit with rotary valve as a burn back protection system and stoker screw for fuel transport
9	Automatic ignition
10	Combustion retort with firebrick combustion chamber and automatic tipping grate
11	Ash box for the combined automatic ash removal unit for the retort and heat exchanger
12	Combustion chamber door with inspection window (screwed on)
13	WOS system with turbulators and automatic drive for heat exchanger cleaning
14	Lambda probe
15	Flue gas sensor

2 Safety

2.1 Danger level of warning notices

These operating instructions use warning notices at the following danger levels, to indicate direct hazards and important safety regulations:

⚠ DANGER

The dangerous situation is imminent and if the measures are not observed, it can lead to serious injuries or death. You must follow the measure!

⚠ WARNING

The dangerous situation may occur and if the measures are not observed, it can lead to serious injuries or death. Work with extreme caution!

⚠ CAUTION

The dangerous situation may occur and if the measures are not observed, it can lead to light or superficial injuries or damage to property!

2.2 Symbols used

The following signs are used in the documentation to give orders, prohibit actions and give warnings.

In accordance with machine directives, signs fitted at the exact point of areas of risk indicate imminent dangers or safety precautions. These stickers must not be removed or covered.

	Observe the operating instructions		Wear safety shoes
	Wear protective gloves		Turn off the main switch
	Keep the doors closed		Unauthorised access prohibited
	Hot surface warning		Dangerous electrical voltage warning
	Dangerous or irritant material warning		Warning that the system starts automatically
	Warning of injuries to fingers or hands, automatic fan		Warning of injuries to fingers or hands, automatic screw
	Warning of injuries to fingers or hands, gear / chain drive		Warning of injuries to fingers or hands, cutting edge

2.3 Safety information

DANGER

Non-permitted use:

Incorrect use of the boiler can cause severe injuries and damage!

The instructions and information provided in the instructions should be observed!

Details on procedure for operation, maintenance and cleaning, as well as troubleshooting for the boiler are included in the individual instructions. Any further work should be carried out by authorised heating engineers or by Froling customer services.

WARNING

External influences:

Negative external influences, such as insufficient combustion air or non-permitted fuel can cause serious faults in combustion (e.g. spontaneous combustion of carbonisation gases or flash fires) which can in turn cause very serious accidents.

Instructions and information for versions and minimum values, as well as standards and guidelines for heating components in the instructions must be observed!

WARNING

Severe injuries and damage can be caused by an inadequate flue gas system!

Problems with the flue system, such as poor cleaning of the flue pipe or insufficient chimney draught can cause serious faults in combustion (such as spontaneous combustion of carbonisation gases or flash fires)!

You can only be guaranteed of optimum performance from the boiler if the flue gas system is running smoothly!

2.4 Permitted uses

The Froling T4 wood chip boiler is intended exclusively for heating up central heating water. Use only the fuels specified under 2.4.2.

The boiler should only be operated when it is in full working order. It should be operated in accordance with the instructions, observing safety precautions, and you should ensure you are aware of the potential hazards.

The inspection and cleaning intervals in these operating instructions should be observed. Ensure that any faults, which might impair safety, are rectified immediately.

The manufacturer / supplier is not liable for any damage resulting from other use.

2.4.1 The Clean Air Act 1993 and Smoke Control Areas

Under the Clean Air Act local authorities may declare the whole or part of the district of the authority to be a smoke control area. It is an offence to emit smoke from a chimney of a building, from a furnace or from any fixed boiler if located in a designated smoke control area. It is also an offence to acquire an "unauthorised fuel" for use within a smoke control area unless it is used in an "exempt" appliance ("exempted" from the controls which generally apply in the smoke control area).

The Secretary of State for Environment, Food and Rural Affairs has powers under the Act to authorise smokeless fuels or exempt appliances for use in smoke control areas in England. In Scotland and Wales this power rests with Ministers in the devolved administrations for those countries. Separate legislation, the Clean Air (Northern Ireland) Order 1981, applies in Northern Ireland. Therefore it is a requirement that fuels burnt or obtained for use in smoke control areas have been "authorised" in Regulations and that appliances used to burn solid fuel in those areas (other than "authorised" fuels) have been exempted by an Order made and signed by the Secretary of State or Minister in the devolved administrations.

Further information on the requirements of the Clean Air Act can be found here: http://smokecontrol.defra.gov.uk/

Your local authority is responsible for implementing the Clean Air Act 1993 including designation and supervision of smoke control areas and you can contact them for details of Clean Air Act requirements”

The Froling T4-24, T4-30, T4-40, T4-50, T4-60, T4-75, T4-90, T4-100 and T4-110 have been recommended as suitable for use in smoke control areas when burning fuels as listed under 2.4.2

2.4.2 Permitted fuels

Wood chips

	Designation as per		Description as per ÖNORM M 7133
	ÖNORM M 7133	ÖNORM/DIN CEN/TS 14961	
Water content	**W20**	**M20**	Air dried
	W30	**M30**	Suitable for storage
	W35	**M35**	Limited suitability for storage
Size	**G30**	**P16A / P16B**	Fine wood chips
	G50	**P45A**	Medium wood chips

Applicable standards:

§

EU:	EN 14961-4 – A2
Austria:	ÖNORM M 7133 or ÖNORM CEN/TS 14961
Germany:	Wood chips in accordance with §3 (1) point 4 of the 1st BImSchV i.d.g.F.

Pellets

Wood pellets made from natural wood with a diameter of 6 - 10 mm

Applicable standards:

§

EU:	EN 14961-2 – A1
Austria:	ÖNORM M 7135 - HP 1 and/or DINplus certification program
Germany:	DIN 51731 - HP 5, DINplus certification program and/or ÖNORM M 7135 - HP 1

Generally applicable:

Before refilling the store, check for pellet dust and clean if necessary.

Changing the fuel

⚠ CAUTION

If fuel parameters are incorrectly set:

Incorrect parameter settings have a significant effect on the functioning of the boiler, and as a result this will void the guarantee.

If the fuel is changed (e.g. from wood chips to pellets), the system must be reset.

➲ See the operating instructions for the H 3200 T4

2.4.3 Non-permitted fuels

The use of fuels not defined under 2.4.2, and particularly the burning of refuse, is not permitted.

⚠ CAUTION

If non-permitted fuels are used:

Burning non-permitted fuels increases the cleaning requirements and leads to a build-up of aggressive sedimentation and condensation, which can lead to damage to the boiler and also voids the warranty! Using non-standard fuels can lead to severe faults with combustion.

2.4.4 Qualification of operating staff

Only trained operators are permitted to operate the boiler. The operator must also have read and understood the instructions in the documentation.

⚠ CAUTION

If unauthorised persons enter the boiler room:

Risk of injury and damage to equipment!

It is the responsibility of the operator to ensure that unauthorised persons, especially children, are kept away from the boiler.

2.4.5 Protective equipment for operating staff

You must ensure that staff have the protective equipment specified by accident prevention regulations.

- During operation, inspection and cleaning of the boiler:
  - Sturdy shoes
  - Protective gloves

2.5 Design Information

It is forbidden to carry out modifications to the boiler or to change or deactivate safety equipment.

Always comply with all fire, building, and electrical regulations when installing or operating the boiler system, and follow the operating instructions and mandatory regulations that apply in the country in which the boiler is operated.

2.5.1 Installation and approval of the heating system

The boiler should be operated in a closed heating system. The following standards govern installation:

Applicable standards:

ÖNORM / DIN EN 12828 Heating systems in buildings

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☞ **Each heating system must be officially approved.**

The appropriate supervisory authority (inspection agency) must always be informed when installing or modifying a heating system, and authorisation must be obtained from the building authorities:

- Austria: Report to the construction authorities of the community or magistrate
- Germany: Report new installations to an approved chimney sweeper / the building authorities.

2.5.2 Information on the installation room (boiler room)

Boiler room characteristics

☞ There must not be a potentially explosive atmosphere in the boiler room as the boiler is not suitable for use in potentially explosive environments.

☞ The boiler room must be frost-free.

☞ The boiler does not provide any light, so the customer must provide sufficient lighting in the boiler room in accordance with national workplace design regulations.

☞ When using the boiler above 2000 metres above sea level you should consult the manufacturer.

☞ Danger of fire due to flammable materials!
Flammable materials must not be stored near the boiler. Flammable objects (e.g. clothing etc.) must not be put on the boiler to dry.

☞ Damage due to impurities in combustion air!
Do not use any solvents or cleaning agents containing chlorine in the room where the boiler is installed.

☞ Keep the air suction opening of the boiler free of dust.

Ventilation of the boiler room

Ventilation air for the boiler room should be taken from and expelled directly outside, and the openings and air ducts should be designed to prevent weather conditions (foliage, snowdrifts, ...) from having any effect on the air flow.

Unless otherwise specified in the applicable building regulations for the boiler room, the following standards apply for the design and dimensions of the air ducts:

Applicable standards:

- TRVB H 118
- ÖNORM H 5170

§

2.5.3 Requirements for heating water

The following standards and guidelines apply:

Applicable standards and guidelines:

§

Austria:	ÖNORM H 5195-1
Germany:	VDI 2035
Switzerland:	SWKI 97-1
Italy:	D.R.P n° 412

☞ Notice on filling with make-up water:

Always bleed the filling hose before connecting, in order to prevent air from entering the system.

2.5.4 Combination with storage tank

NOTICE

It is not generally necessary to use a storage tank for the system to run smoothly. However we recommend that you use it with a storage tank, as this allows you to achieve continuous reduction within the ideal performance range of the boiler.

For the correct dimensions of the storage tank and the line insulation (in accordance with ÖNORM M 7510 or guideline UZ37) please consult your installer or Froling.

➲ Page 42, 6.1 Addresses

Return temperature control

If the hot water return is below the minimum return temperature, some of the hot water flow will be mixed in.

⚠ CAUTION

Risk of dropping below dew point / condensation formation if operated without return temperature control.

Condensation water forms an aggressive condensate when combined with combustion residue, leading to damage to the boiler.

☞ We recommend that you use a return temperature control.

☞ The minimum return temperature is 45 °C. We recommend fitting some kind of control device (e.g. thermometer).

2.5.5 Chimeny connection / chimney system

EN 303-5 specifies that the entire flue gas system must be designed to prevent, wherever possible, damage caused by seepage, insufficient feed pressure and condensation. It should be noted here that flue gas temperatures of less than 160 K above room temperature can occur within the permitted operating range of the boiler.

The flue gas temperatures (for clean systems) and additional flue gasvalues can be found in the technical specification sheets of the assembly instructions.

The entire flue gas system (chimney and connection) must be calculated as per ÖNORM/DIN EN 13384-1

2.6 Safety devices

1	Standby key	If the boiler overheats: ❒ Press the standby key ( ) ➥ Automatic operation is switched off and the controller follows the boiler shutdown procedure ➥ The pumps continue to run! ☞ **Never use the main switch!**
2	Safety Temperature Limiter	Page 18, Safety temperature limiter STL
3	Main switch	For shutting down the entire system ❒ The power to all components is switched off. ☞ Only switch off the main switch when the boiler has cooled down and the controller is switched off ("Boiler off" status).
Not shown	Glass fuses (below the insulating cover):	They fuse the controller and electrical components When changing the fuses, note the following: ☞ Only have the fuses changed by an electrician, and the power supply should be switched off. ☞ Observe the rated current on the fuses.
Not shown	Water sprinkler system	In case of burn back, the valve of the water sprinkler system opens and water goes into the gravity shaft as well as the duct of the feed screw. ☞ It is only necessary to connect this when required by the authorities, however it is generally recommended.

2.6.1 Safety temperature limiter STL

Stops combustion at a max. boiler temperature of 100 °C. The pumps continue to run.

☞ Once the temperature has fallen to under approx. 95 °C, the safety temperature limiter can be unlocked mechanically.

➲ See 5.2 Excessive temperature

2.6.2 Safety valve

It protects against overheating and overpressure in the system and the customer must have it installed by the heating engineer:

When the boiler pressure reaches 3 bar, the safety valve opens and the heating water is released in the form of steam.

2.7 Residual risks

WARNING

On touching hot surfaces:

Hot parts and the flue pipe can cause serious burns!

- ❒ Always wear protective gloves when working on the boiler.
- ❒ Only operate the boiler using the operating elements provided for this purpose
- ❒ Insulate the flue gas pipes and avoid touching them during operation

WARNING

On opening the combustion chamber door during operation:

This may cause injury, damage and smoke!

It is forbidden to open the doors behind the insulating door during operation!

WARNING

If inspection or cleaning work is carried out with the main switch on:

Serious injuries possible due to automatic activation of the boiler!

Before inspection or maintenance work on/in the boiler:

- ❒ Press the standby key ( )
  - ➥ Boiler follows shutdown procedure and changes to the operating status "Boiler off"
- ❒ Let the boiler cool down for at least 1 hour
- ❒ Switch off the main switch

WARNING

If non-permitted fuels are used:

Non-standard fuels can cause serious faults in combustion (e.g. spontaneous combustion of carbonisation gases / flash fires) which can lead to serious accidents!

Only use fuels specified in the chapter on "Permitted Uses" in these operating instructions.

2.8 Emergency actions

2.8.1 System overheating

If the system overheats in spite of the safety devices, proceed as follows:

- ❒ Keep all the doors on the boiler closed.
- ❒ Switch off the boiler by pressing the standby key ( )
  - ☞ Under no circumstances use the main switch!
- ❒ Open all mixer taps and switch on all pumps.
  - ☞ Froling's heating circuit control takes over this function!
  - ☞ When using a third party controller, carry out the relevant measures to activate the mixer and pumps manually.
  - ❒ Exit the boiler room and close the door
  - ❒ Open any available radiator thermostat valves

If the temperature does not drop, inform the installer or Froling customer services:

➲ Page 42, 6.1 Addresses

2.8.2 Smell of flue gas

⚠ DANGER

If you can smell flue gas:

Flue gases can cause fatal poisoning!

- ❒ Keep all the doors on the boiler closed.
- ❒ Switch off the boiler by pressing the standby key ( )
  - ☞ **Under no circumstances use the main switch!**
- ❒ Ventilate the boiler room, if there is a connection to the open air
- ❒ Close the doors to living areas to prevent an overflow of flue gas

3 Operating the system

3.1 Notes on installation

Assembly, installation and initial start-up of the boiler must only be carried out by qualified staff, and these procedures are described in the accompanying assembly instructions.

➲ See T4 assembly instructions

3.2 Initial start-up

NOTICE

☞ **Optimum efficiency and efficient, low-emission operation can only be guaranteed if the system is set up by trained professionals and observing the standard factory settings.**

Take the following precautions:

❒ Initial start-up should be carried out with an authorised installer or with Froling customer services.

The individual steps for initial start-up are explained in the operating instructions for the controller.

➲ See the operating instructions for the Lambdatronic H 3200 T4

NOTICE

If condensation escapes during the initial heat-up phase, this does not indicate a fault.

☞ Clean up using a cleaning rag as necessary

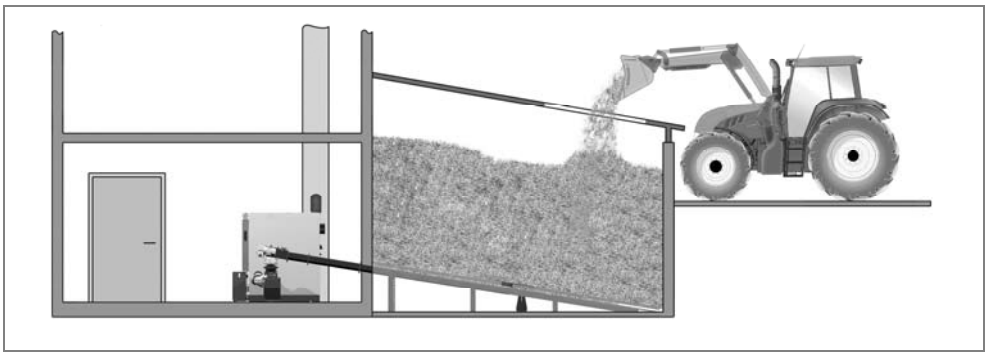
3.3 Filling / refilling the store with fuel

When you fill the store you should always ensure that you are using the right fuel:

➲ Page 12, 2.4.2

Permitted fuels

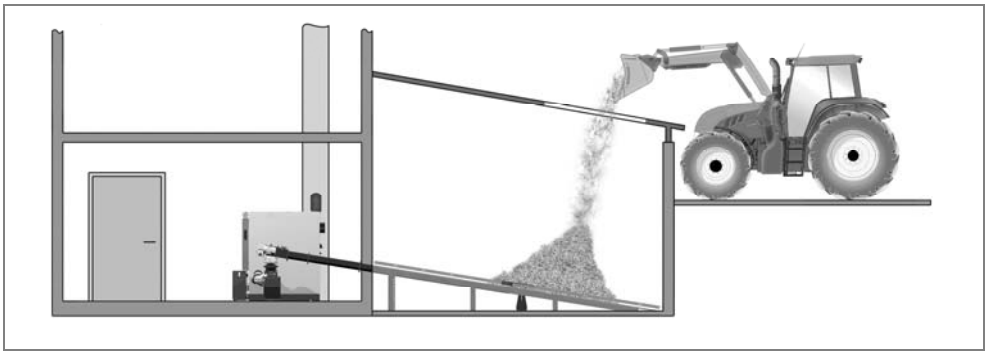
3.3.1 Loading wood chips in a partially emptied store (not under pressure)



If there is still sufficient fuel in the store (the head of the stirrer is completely covered with fuel), the store can be filled:

❒ Load the fuel at the filling opening

3.3.2 Loading wood chips in an empty store (not under pressure)



☞ **CAUTION! If the head of the stirrer is already free of material and the arms / spring blades are extended, then the feeder unit must be active during the filling process.**

❒ Press and hold the party program key (✲) for 5 seconds
➥ "Extra heating" mode is activated

❒ Load a small quantity of wood chips and wait until the arms / spring blades are touching the head of the stirrer (approx. 2 revolutions)
❒ Only then should you load the remaining material

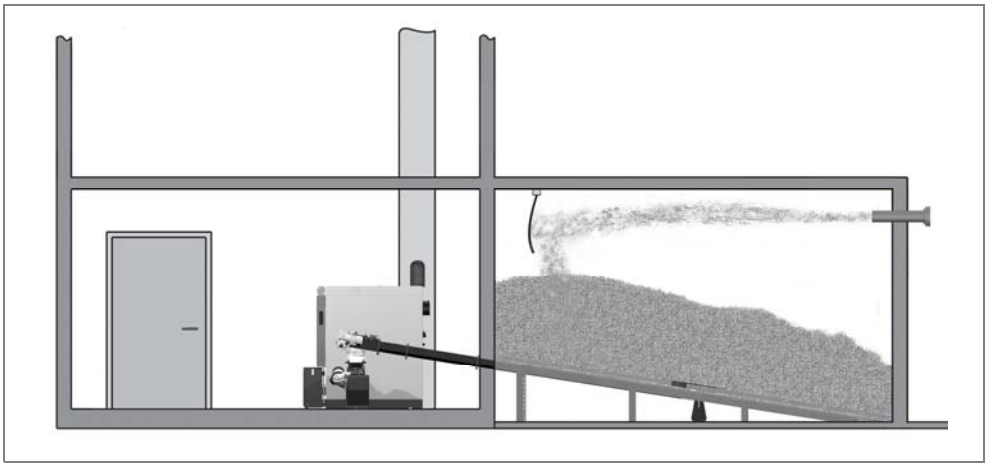
3.3.3 Blowing in pellets for a store with pellet screw

For systems with a pellet screw, the boiler must be in "OFF" status when the store is filled. The under-pressure from the blowing could bring

smoke back into the store. Any overpressure that occurs can cause smoke to escape into the installation room.

- ❒ Switch off the boiler by pressing the standby button ( ) and allow it to cool down for at least two hours.
- ❒ Close all openings to the store to seal out dust
- ❒ Blow the fuel into the store

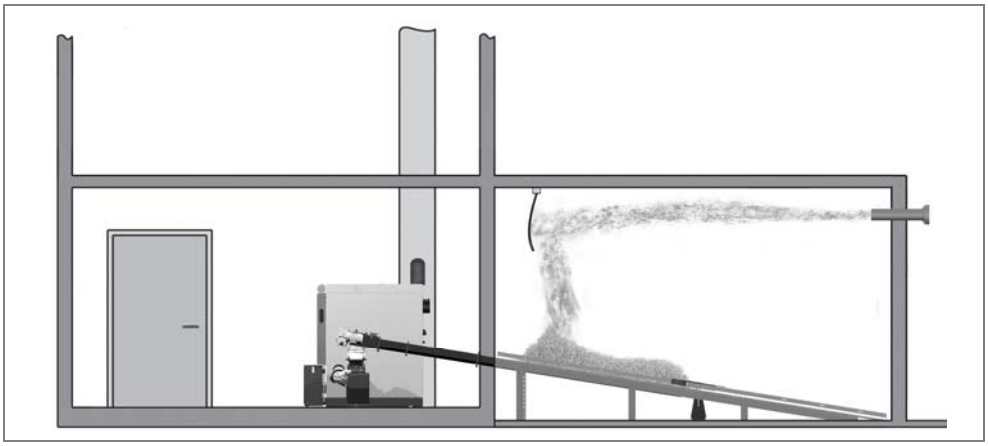
3.3.4 Blowing in fuel for a partially emptied store with stirrer



If there is still sufficient fuel in the store (the head of the stirrer is completely covered with fuel), the store can be filled as follows:

- ❒ Switch off the boiler by pressing the standby button ( ) and allow it to cool down for at least two hours.
- ❒ Close all openings to the store to seal out dust
- ❒ Blow the fuel into the store

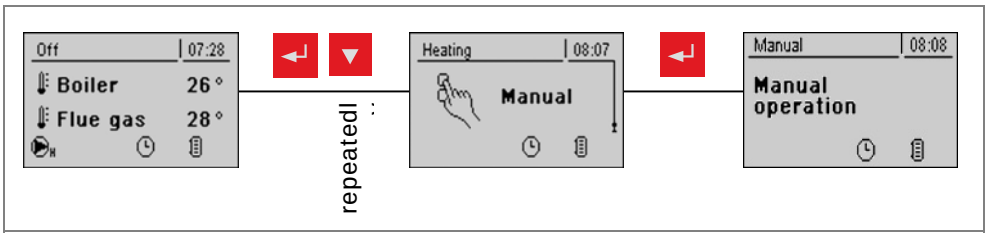
3.3.5 Blowing in fuel for an empty store with stirrer



☞ **CAUTION! If the head of the stirrer is already free of material and the arms / spring blades are extended, then the feeder unit must be active during the filling process, however the boiler must be in "OFF" status.**

❒ Switch off the boiler by pressing the standby button ( ) and allow it to cool down for at least two hours.
❒ Close all openings to the store to seal out dust

❒ Call up the "Manual operation" menu



❒ Activate the following units in the order shown:
- Tilt motor ON
- Ash screw ON
- Discharge system from bunker ON
- Stoker FORWARD

❒ Blow the fuel into the store

❒ After approx. 5 min deactivate the feed screw
❒ Wait until the stoker is completely emptied, and only then deactivate the stoker screw
☞ If there is a fuel residue in the stoker, there is a danger of a flash fire the next time the boiler is started, due to a excessive infeed quantity.
❒ Wait until all the fuel in the retort has been transported to the ash container and only then deactivate the ash screw
☞ If there is fuel residue in the boiler, the chamber can be damaged the next time the boiler is started.
❒ Empty the ash container after the end of the procedure
☞ If there is fuel residue in the ash bucket, there is a danger of fire.

3.4 Heating up the boiler

NOTICE

Do not modify the factory settings!
Changing the system´s factory settings can be detrimental to efficiency and emissions of the system!

3.4.1 Switching on the system

❒ Turn the main switch on the back of the boiler to the "ON" position
➥ After the system check by the controller, the system is ready for operation
➥ "Boiler Off" is shown on the display

3.4.2 Switching on the boiler

❒ Press the standby key ( )
➥ Automatic mode is activated
➥ The heating system is controlled via the controller according to the selected mode.

3.4.3 Controlling the boiler

➲ See the operating instructions for the Lambdatronic H 3200 T4

3.4.4 Switching off the boiler

❒ Press the standby key ( )
➥ The boiler follows the shut-down program and switches to "Boiler OFF" status.
➥ The combustion unit is switched off, the chamber discharge unit and the active hydraulic system are active

3.4.5 Switching off the power supply

⚠ WARNING

When switching off the main switch in automatic mode:

Severe combustion faults are possible and these may cause very serious accidents!

Before switching off the main switch:

❒ Press the standby key ( )
➥ Boiler follows shutdown procedure and changes to the status, "Boiler off"

☞ **CAUTION! Only when the boiler is cold, in "Boiler Off" status!**

❒ Switch off the main switch on the back of the boiler
➥ The controller is switched off
➥ The components powered via the switch cabinet are powered down
☞ The expansion switch cabinet, which has its own power supply, is still live!

4 Boiler maintenance

4.1 General information on maintenance

DANGER

When working on electric components:

Risk of serious injuries from electric shocks

❒ Work on electrical components should only be carried out by authorised technicians

WARNING

On touching hot surfaces:

Hot parts and the flue pipe can cause serious burns!

❒ Always wear protective gloves when working on the boiler.
❒ Only operate the boiler using the operating elements provided for this purpose
❒ Insulate the flue gas pipes and avoid touching them during operation

WARNING

In case of non-permitted inspection and cleaning:

Incorrect or insufficient cleaning and maintenance of the boiler can cause serious faults in combustion (e.g. spontaneous combustion of carbonisation gases / flash fires) and this can lead to serious accidents!

Clean the boiler following the instructions. Follow the boiler operating instructions.

NOTICE

☞ We recommend that you keep a maintenance book in accordance with ÖNORM M7510 or the Technical Directive for Fire Prevention (TRVB)

4.2 Inspection and cleaning

☞ Regular cleaning of the boiler extends its life and is a basic requirement for smooth running.
So clean the boiler regularly!

☞ Recommended: When cleaning, use an ash vacuum.

4.2.1 Checking the system pressure

❒ Read off the system pressure on the pressure gauge
➥ The value must be above the pre-stressed pressure of the expansion tank by 20%
➲ Expansion tank operating instructions

If the system pressure decreases:

❒ Top up the water
☞ If this occurs frequently, the seal of the heating system is faulty! Inform your installer!

If large pressure fluctuations are observed:

❒ Have the expansion tank checked by the qualified technician

☞ Position of the manometer and rated pressure according to installer

4.2.2 Check the geared motors

❒ Carry out a visual inspection of all geared motors of the system to check the seal
➥ There must not be a large quantity of lubricant coming out.

☞ If a few drops of lubricant are coming out, this can be normal.
If a lot of lubricant is being lost, inform your installer or Froling customer services.

4.2.3 Emptying the ash container

The ash container must be emptied at the correct interval according to energy requirements and fuel quality.

If the ash container fills up before the ash level check, the warning, "**`Ash box full, please empty`**" is shown on the display.

⚠ WARNING

When removing the ash container cover during operation:

Incorrect air supplied via the ash screw channel can lead to uncontrolled combustion and as a result to accidents.

Before checking the ash level / emptying the ash box:

❒ Press the standby key ( )

➥ Boiler follows shutdown procedure and changes to the operating status "Boiler off"

In the operating status, "Boiler off":

❒ Open the insulating door

☞ **Observe the sticker on the cover of the ash container!**

❒ Open the side clamps and take off the cover of the ash container (1)

❒ Check the ash level in both chambers

➥ If one of the two chambers is more than two thirds full the ash container should be emptied

❒ Open the ash container clamp with the fixing lever (2)

❒ Remove the ash container from the boiler (3)

❒ Put the transport covers over the openings of the ash container

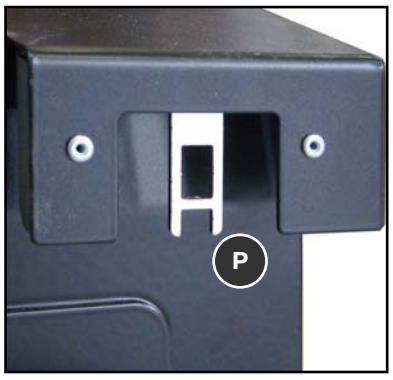
❒ Put on the cover of the ash container, pull out the transport handle and transport the ash container to the emptying point

When the ash container has been emptied:

❒ Put the ash container back on at the boiler and clamp with the fixing lever

❒ Put on the cover and fix with the clamps

☞ Ensure that the pins (P) are inserted into the limit switch (L)



4.2.4 Recurring checks and cleaning

The boiler should be cleaned and checked at appropriate intervals depending on the service hours and the fuel quality.

For fuels with a low ash content (standard wood chips) annual cleaning and checks (or 2000 - 2500 service hours) is generally sufficient. For problematic fuels and fuels with high ash content (these can be recognised by the short emptying interval for the ash box) the frequency of these tasks should be increased appropriately.

⚠ WARNING

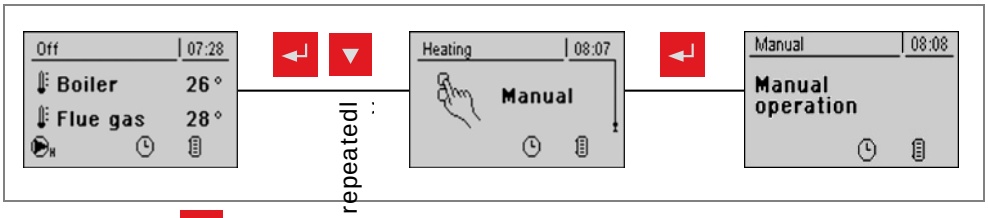
Inspection and cleaning work when the boiler is switched on:

Serious injuries from automatic startup of the boiler and serious burns on hot parts and on the flue gas pipe are possible!

- ❒ Only carry out work on the boiler when the main switch is turned off
- ❒ Always wear protective gloves when working on the boiler.
- ❒ Only operate the boiler using the handles provided for this purpose
- ❒ Observe the following procedure for starting and finishing inspection and cleaning work

Before inspection and cleaning work

- ❒ Press the standby key ( )
  - ➥ Boiler shuts down and changes to the operating status, "Boiler off"
- ❒ Let the boiler cool down for at least 1 hour
- ❒ On the controller, navigate to the "Manual operation" menu

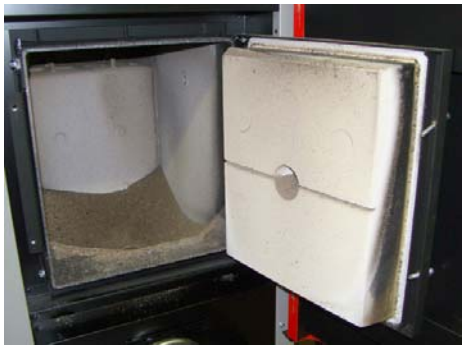


- ❒ Press the key to navigate to the parameter "**Grate tip drive**"
- ❒ Press the key to release the parameter for changes and press the key to set to "ON"
  - ➥ The combustion grate is tipped
- ❒ Switch off the main switch

After inspection and cleaning work

- ❒ Switch on the main switch
  - ➥ The combustion grate, which has previously been manually opened, closes automatically and the boiler changes to "Boiler off" operating status"
- ❒ Press and hold the service program key ( ) for 5 seconds
  - ➥ The boiler starts cleaning mode and disposes of all ash residues in the upper combustion chamber
  - ➥ When self-cleaning has been carried out the boiler changes to "Boiler off" operating status

Cleaning the combustion chamber



- ❒ Open the insulating door
- ❒ Loosen the screw connections on the combustion chamber door
- ❒ Open the combustion chamber door

- ❒ Remove fallen ash from the upper combustion chamber using a small shovel or similar (ash vacuum recommended)
  - ☞ Do not throw the ash onto the grate

- ❒ Remove the burn-out opening
- ❒ Remove the dirt on the burn-out opening with a brush
- ❒ Remove ash that has built up on the side walls with the ash scraper

- ❒ Clean the combustion chamber bricks and combustion chamber grate with an ash scraper
- ❒ Remove fallen ash and ash on the guide plates and under the grate using an ash vacuum

- ❒ Carry out a visual inspection of the combustion chamber brick for damage
- ❒ Check the combustion chamber grate for cracks and deformation.
  - ➥ Small cracks and deformations are not considered defects. The boiler must only be taken out of operation when entire pieces of the grate threaten to break off. In this case, Froling customer services should be informed.

- ❒ Insert the burn-out opening
  - ☞ The opening must be opposite the infeed side.

Cleaning the heat-exchanger and flue gas collection chamber

- ❒ Remove the insulating cover and the insulating mat

❒ Loosen the lock nut at the star-shaped screw knob
❒ Unlock the cover by turning the star-shaped screw knob and remove

At T4 60-110:

❒ Unlock the cover by turning the star-shaped screw knob and open

Is the room not high enough the heat exchanger cover can be removed completely:
❒ Dismount the screws of the hinge and remove the cover

❒ Clean the flue gas collection chamber with an ash vacuum
❒ Take out the guide plate

- ❒ Remove ash below the guide plate with the ash vacuum
- ❒ Clean the heat exchanger pipes with the cleaning brush supplied
  - ☞ Push the cleaning brush all the way through and only then pull it out.

- ❒ After cleaning, refit the parts that have been removed in reverse order

Clean the flue gas sensor

- ❒ Loosen the wing screw and remove the flue gas sensor
- ❒ Wipe off the flue gas sensor with a clean cloth
- ❒ Slide in the flue gas sensor and secure it hand-tight using the wing screw
  - ☞ When replacing the flue gas sensor, push it in until about 20 mm of the sensor remains protruding from the bushing.

Cleaning the smoke flue pipe

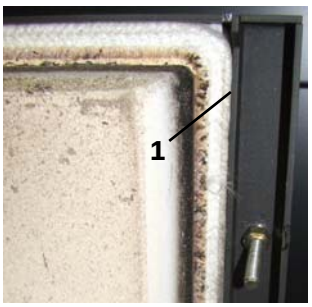
- ❒ Clean the connecting pipe between the boiler and the chimney regularly with a chimney sweeping brush
  - ☞ During cleaning ensure that no ash gets into the induced draught unit housing
  - ☞ TIP: remove the flue gas sensors before cleaning to avoid damage
  - ☞ Depending on the layout of the flue pipes and the chimney draught cleaning, annually may not be enough!
    The cleaning interval should be adjusted accordingly.

Checking the draught controller flap and explosion flap

❒ Check the draught controller flap and explosion flap for ease of operation

➥ If they cannot move smoothly, have them replaced immediately.

Checking the combustion chamber door



❒ Close the combustion chamber door and check its seal

❒ Check fibre-glass seal (1) for perfect alignment on the door frame

➥ Imprint in the fibre-glass seal

If the seal is coloured black at several points or the imprint is interrupted:

➥ The seal is no longer efficient.

☞ Tighten the door latches or replace the fibre-glass seal

Clean the measurement line of the underpressure controller

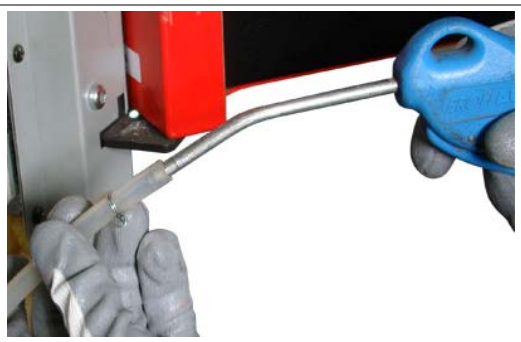
❒ Open the insulated door and remove the ash box
➲ See 29, 4.2.3 Emptying the ash container

❒ Remove the screws on the left and right on the front cover plate
❒ Push up the cover plate and remove

T4 24-75

T4 90-110

❒ Loosen the double wire clamp with pliers and remove the measurement line



❒ Clean the measurement line with slightly compressed air
☞ CAUTION! Do not blow compressed air into the underpressure sensor cartridge. The sensor cartridge might be damaged.
❒ After cleaning fit the measurement line again in the same position (connection "-")

4.3 Instructions for measuring emissions

4.3.1 Measurement at rated load

❒ Ensure the highest possible heat consumption:
- Ensure that heating pumps are switched on
- Open mixer valves and radiator valves
- Set the boiler loading time to the current time
- Set the boiler temperature setpoint to 85°C

☞ Chimney sweep mode takes over this function

Activating chimney-sweep mode

❒ Press the service program key ( )
➥ The chimney sweeper program for boiler measurement is started. The system is operated for 45 minutes at rated load. For this purpose the maximum boiler temperature, the maximum heating circuit flow temperature and the DHW tank loading are released.

When is it possible to measure:
- Flue gas temperature at approx. 140°C (+/- 20 °C depending on whether the boiler has been cleaned)
- O_2 content of the flue gas between 8 and 12% (corresponds to a CO_2 content between 13 and 19%)
- Boiler temperature above 65°C

4.3.2 Measurement at partial load (if necessary)

❒ Ensure heat consumption:
- Ensure that heating pumps are switched on
- Open mixer valves and radiator valves
- Set the boiler loading time to the current time

❒ Force partial load:
- After measuring at rated load, lower the boiler temperature setpoint by 5°C

When is it possible to measure:
- Flue gas temperature at approx. 100°C (+/- 20 °C depending on whether the boiler has been cleaned)
- O_2 content of the flue gas between 10 and 14% (corresponds to a CO_2 content between 11 and 7%)
- Boiler temperature above 65°C

☞ After measurement all adjusted parameters (e.g. DHW tank loading times, ...) must be reset to their original value!

4.4 Maintenance agreement / Customer service

☞ Long service life with a service agreement!

Regular maintenance and servicing by a heating specialist will ensure a long, trouble-free service life for your heating system.

It will ensure that your system stays environmentally-friendly and operates efficiently and cost-effectively.

For this reason, FROLING offers a service agreement, which optimises operating safety. Please see the details in the accompanying guarantee certificate.

Your Froling customer service office is also glad to advise you.

4.5 Replacement parts

With Froling original replacement parts in your boiler, you are using parts that match perfectly. As the parts fit together so well, installation times are shortened and lifespan is maintained.

NOTICE

Installing non-original parts voids the guarantee!

❒ Only replace components or parts with original replacement parts

5 Eliminating Faults

5.1 General faults in power supply

Error characteristics	Cause of error	Error correction
Nothing is shown on the display **No power to the controller**	General power failure Main switch is turned off FI circuit breaker or line protection is switched off Faulty fuse in the controls	 Turn on the main switch ➲ See 3.4.1 Switching on the system Switch on the FI circuit breaker or line protection Replace fuse – note the current (10AT) ☞ Work on electrical components must only be carried out by a qualified electrician.

5.1.1 System procedure following power failure

When the power supply has been restored the boiler returns to the previously specified mode and is controlled according to the specified program.

☞ **Keep the doors of the boiler closed during and after the power failure!**

☞ **After the power failure, check if the STL has fallen.**

5.2 Excessive temperature

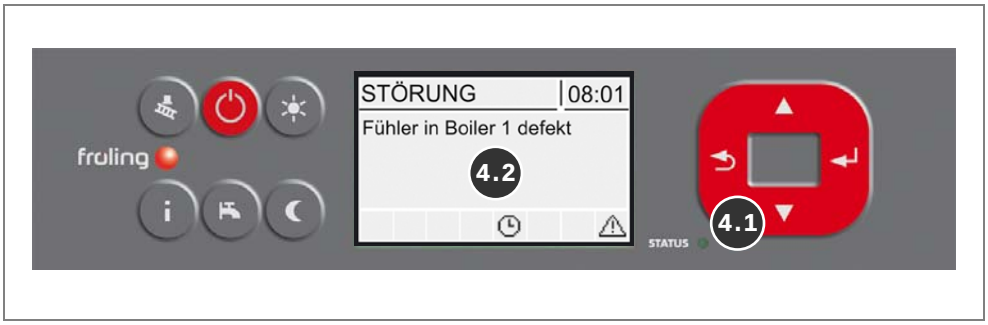
The safety temperature limiter (STL) shuts down the boiler when it reaches a temperature of approx. 100°C. After the boiler has cooled down, the safety temperature limiter must be manually unlocked:

❒ Unscrew the cap on the STL (1)

❒ Reset the safety temperature limiter by pressing with a screw-driver.

❒ Replace the cap

5.3 Faults with fault message



When a fault message is pending:

➥ The status LED (4.1) shows the type of fault:
- Orange constant: BUS error
- Orange flashing: Warning
- Red flashing: Error or alarm

➥ The associated fault message is shown on the display (4.2)

The term "fault" is a collective term for warnings, errors and alarms. The boiler reacts differently to the three types of message:

WARNING	In case of warnings (e.g. Ash box full, please empty) the boiler continues to run, offering the opportunity to prevent the shutdown procedure by swiftly resolving the fault.
ERROR	The boiler follows shutdown procedure and remains in "Boiler off" status until the problem is resolved.
ALARM	An alarm triggers a system emergency stop. The boiler shuts down immediately, the heating circuit controller and pumps remain active.

5.3.1 Procedure for fault messages

The procedure in case of fault message, the causes for faults and procedure for troubleshooting are described in the operating instructions for the boiler controller:

➲ See the operating instructions for the Lambdatronic H 3200 T4

5.3.2 Acknowledging a fault message

Trace and remove the fault and then:

❒ Press the ENTER key (↵)

➥ The status LED lights up or flashes green (depending on the operating status)

6 Appendix

6.1 Addresses

6.1.1 Manufacturer's Address

FRÖLING
Heizkessel- und Behälterbau GesmbH

Industriestraße 12
A-4710 Grieskirchen
AUSTRIA

TEL +43 (0)7248 606 0
FAX +43 (0)7248 606 600
E-MAIL info@froeling.com
WEBSITE www.froeling.com

6.1.2 Installer's address

STAMP